DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-001736
Date Inspected: 07-Mar-2008

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

OSM Arrival Time: 630
OSM Departure Time: 1730
Location: Shanghai, China

CWI Name: Zhang Zhong, Hu Wei Qing

Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**CWI Present:**	☑ Yes	☐ No	
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☐ Yes	☑ No	☐ N/A
				Approved WPS:	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: Tower/OBG

Summary of Items Observed:

Caltrans Quality Assurance (QA) Inspector Sherri Brannon arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China to periodically monitor welding and Quality Control (QC) functions. While on site the QA Inspector observed and/or discovered the following.

Bay 1-OBG Deck Panels:

QA Inspector Brannon observed the Production Monitoring Test (PMT) U-rib welding and welding for Production Panel DP026-002 and DP078-001, closed rib welds in Bay #1, Gantry 1. ZPMC welding operators performed gantry machine, gas metal arc welding (GMAW) for the root and submerged are welding (SAW) for the cover pass. Qualified welders were observed welding in the 2G (horizontal) position utilizing gas metal arc welding (GMAW) process for the root pass with a 1.4mm diameter electrode, filler metal brand JM-56, class ER70S. ZPMC used a dual process WPS-B-T-2342-U1 (U-rib)-3 that was posted as the welding procedure specification (WPS) for closed U-rib to deck panel welding. The ambient temperature in bay #1 was recorded at 11 degrees Celsius prior to welding. The following weld joint and welders were recorded for the PMT U-rib welding and for production panel's DP026-002 and DP078-001. Weld joint (wj)-#1 Mr. Chen Jue ID#059468, wj-#2 Mr. Xiang Jie ID#059378, wj-#3 Mr. Zhang Shao ID#059403, wj-#4 Mr. Xiang Huan Feng ID#059416, wj-#5 Mr. Gao Xin Dong ID#059361, and wj-#6 Mr. Song Yin Shu ID#059421. Gantry operator was Mr. Li Xi De for GMAW. Gantry operator was Mr. Bi Ya Hui for GMAW and Ban Xiao Hui for SAW. QA Inspector Brannon observed tears and fins on weld joints prior to GMAW welding. Areas were shown to ZPMC personnel prior to welding. Note: The two deck panels had the GMAW root pass applied prior to having the PMT completed resulting in an Incident report.

Production Monitoring Test (PMT)
Welding started at 0839 and completed at 0842, the following welding variables were recorded at, amperage 349 to 363, voltage 30.5 to 31.1 with a travel speed of 529 mm/min for the GMAW. Welding started at 1338 and completed at 1340, the following welding variables of the (PMT) were recorded at, amperage 668 to 683, voltage 24.6 to 25.6 with a travel speed of 520 mm/min for the SAW. All three closed ribs were welded simultaneously weld joints 1~6.

Production panel DP026-002
Welding started at 0849 and completed at 0942, the following welding variables were recorded at, amperage 348 to 373, voltage 30.4 to 31.1 with a travel speed of 529 mm/min for the GMAW. Weld joints #3, 4, 7 & 8 were welded 1st and weld joint #1, 2, 5 & 6 were welded 2nd for the 4 rib panel. Welding started at 1346 and completed at 1410, the following welding variables were recorded at, amperage 668 to 685, voltage 24.5 to 25.6 with a travel speed of 515 mm/min for the SAW. Weld joints #1, 2, 5 & 6 were welded 1st and weld joint #3, 4, 7 & 8 had not started prior to the end of this shift.

Production panel DP078-001
Welding started at 1006 and completed at 1117, the following welding variables were recorded at, amperage 350 to 375, voltage 30 to 31 with a travel speed of 515 mm/min for the GMAW. Weld joints #3, 4, 7 & 8 were welded 1st and weld joint #1, 2, 5, 6, 9 & 10 were welded 2nd for the 5 rib panel. Welding started at 1426 and stopped at 1441 prior to the completion of the weld joint due welding wire getting hung up, the following welding variables were recorded at, amperage 675 to 687, voltage 24.5 to 25.6 with a travel speed of 525 mm/min for the SAW. Weld joints #1, 2, 5, 6, 9 & 10 were started first but not completed at the end of this shift, and weld joint #3, 4, 7 & 8 were welded 2nd but not completed at end of this shitf. Per ABF Peter Shaw weld joint #1, 2, 5, 6, 9 & 10 where ZPMC stopped ZPMC will grind stop area's and perform magnetic particle testing.

QA Inspector Brannon randomly observed ZPMC QC CWI Inspector Mr. Zhang Zhong monitoring welding parameters were in accordance with the above Welding Procedure Specification (WPS).

Bay 1-OBG Deck Panel (U-Rib diaphragm): NDT (VT/MT):
QA Inspector Brannon observed ZPMC magnetic particle (MT) technician Mr. Zhou Dong Yun performing (MT) the fillet weld for DP038-001-014 and DP042-002-014 (u-rib diaphragm) and accepted the fillet weld.

Bay 3 - OBG Floor Beams:
QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Wang Liansheng ID#051127 groove welding at weld stiffener to floor beam for FB021-02-100. Mr. Wang was observed welding in the 2G (horizontal) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1 semi automatic. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Hu Wei Qing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Brannon also verified the preheat temperature to be a minimum of 80°C and measured the welding parameters to be 290 amps, 30.2 volts, a travel speed of 308 mm/min and a shielding gas flow of 18L/min. Welding parameters measured by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2232-B-U4b-F, Revision 1.

Bay 7 - OBG Floor Beams:

WELDING INSPECTION REPORT

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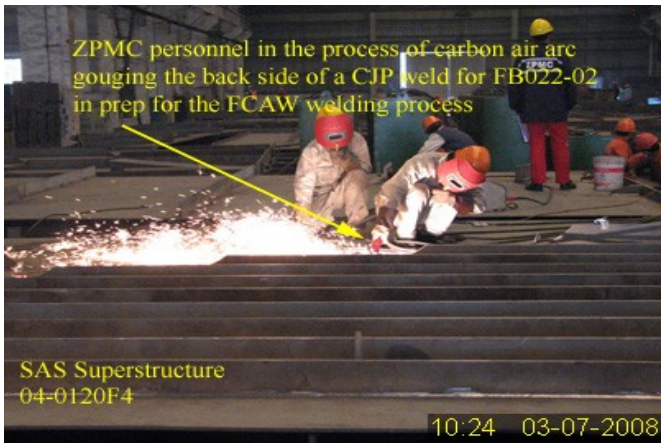
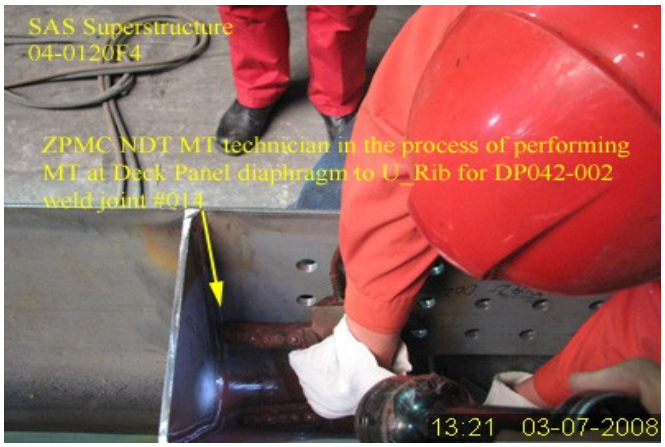
QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Liu Longxian ID#044786 fillet welding stiffener to diaphragm for FB003-03-037 & 038. Mr. Lui was observed welding in the 2F (horizontal) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1 semi automatic. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Hu Wei Qing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Brannon also verified the preheat temperature to be a minimum of 80°C and measured the welding parameters to be 305 amps, 29.4 volts, a travel speed of 437 mm/min and a shielding gas flow of 18L/min. Welding parameters measured by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2132-3, Revision 1.

The following digital photograph below illustrates observation of the activities being performed.





Summary of Conversations:

As stated within the report.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By:	Brannon,Sherri	Quality Assurance Inspector
Reviewed By:	Cuellar,Robert	QA Reviewer